BY ORDER OF THE AIR FORCE SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 13-212, Volume I

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Space, Missile, Command, and Control

WEAPONS RANGES

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This instruction implements AFPD 13-2, *Air Traffic Control, Airspace, Airfield, and Range Management.* It provides for range responsibilities, safety, equipment and facilities, and security. For a list of abbreviations and terms used throughout AFI 13-212, Volumes I, II and III, see **Attachment 1**.

SUMMARY OF REVISIONS

The is the first publication of AFI 13-212; it divides the instruction into three volumes. Volume I provides the purpose of weapons training ranges. Volume II provides weapons range management concepts. Volume III provides the Hazard Methodology. This revision aligns the three volume instruction with AFPD 13-2.

Chapter 1

GENERAL RANGE INFORMATION

1.1. Purpose and General Description of Training Weapons Ranges.

1.1.1. Training. Training is the foundation upon which the Air Force builds, maintains, and ultimately achieves the readiness of combat personnel. Weapons ranges are central to these efforts. The Air Force plans, designs, constructs, operates, maintains, and improves ranges, consistent with their individual potential to provide the best possible environment for training. This environment should provide for developing basic weapons delivery skills, and the opportunity for aircrews and weapon systems to be employed in a realistic manner, as they would in combat.

1.1.2. Air-to-Surface Ranges. The Air Force formally classifies air-to-surface weapons ranges according to several criteria, but generally meet two types of training needs. One is the highly structured environment where inexperienced Aircrew learn to handle the aircraft while operating weapons systems and meeting delivery parameters. Experienced Aircrew also use these ranges to meet periodic qualification for certain weapons delivery events. Flight tracks, altitudes, speeds, and other conditions are all specified, with little or no flexibility, and only a limited number of aircraft may participate at a given time. These ranges occupy minimal amounts of land and airspace. In the past, these ranges satisfied the majority of the Air Force's training needs, but advances in technology have yielded a threat environment requiring much more sophisticated and flexible training. Additionally, advances in our aircraft, navigation, and weapons employment systems have dramatically altered the training agenda. As a result the Air Force has an increased need for flexible training scenarios. Ranges satisfying this second training need typically require larger airspace and land areas, and demand a higher investment in facilities and equipment.

1.1.2.1. Conventional Ranges. The Air Force designs a conventional range to provide a highly structured training environment for aircrews. Most targets are highly visible from the air due to plowing of the soil around the target, clearly defined run-in lines and lighting at night. There are other visual cues to help the Aircrew remain oriented, such as range towers, well maintained roads, maintenance and administrative buildings, and proximity to other military or civilian facilities. The Range Control Officer (RCO) monitors range operations and safety from the main tower. Normally, the RCO only permits four or less aircraft to work on the range at one time due to the structured airspace and flight patterns common to conventional ranges. Additional aircraft may participate if deemed appropriate by the operating agency. Flight patterns and run-in headings are specified according to the target or event. Personnel on the ground accomplish scoring with rapid feedback to the Aircrew. Wind direction and velocity, altimeter setting and other weather data routinely are updated and provided to the Aircrew during the range mission. Typical weapon delivery events include dive bomb, low angle bomb, pop-up attacks, rockets and strafe. Use practice or training ordnance for safety to ground personnel and to limit damage to targets, scoring equipment and facilities. Simulated enemy air defenses such as electronic threat emitters and Smoky Sams may be available, but Aircrew response, in terms of tactics and maneuvering, is limited. Chapter 1 of Volume 2 discusses conventional range design and layout.

1.1.2.2. A Tactical range permits greater freedom to the Aircrew in terms of mission planning, tactics and threat reaction. It also presents them with a more challenging mission, due to the fact that targets are dispersed over a larger area and are more difficult to locate. Target placement is

not the center of plowed circles, nor are there run-in lines to guide the pilot to the target. In fact, the purpose of the tactical range is to present a realistic target environment for realistic training. Instead of bomb circle targets aircrews may encounter convoys, tanks, airfields, dispersed troop formations, industrial areas and other targets they would expect to attack in combat. There are few man-made visual cues to orient them to the targets. Rather, they must rely more on accurate navigation, map or photo interpretation, geographic landmarks and target identification. Although there may be ground personnel in the area for range support functions, the Aircrew normally operate without an RCO on the ground. The flight lead, forward air controller or other designated person provides the RCO function of monitoring operations and safety. Many tactical ranges designate targets for live ordnance employment. The use of live and full-size inert ordnance adds to the effectiveness of many training missions. Personnel normally accomplish scoring from a remote location, using Television Ordnance Scoring Systems, Air Combat Maneuvering Instrumentation/Measurement Debrief System or other means. Members of the flight or an airborne observer may also perform scoring. The number of aircraft that may participate in a range mission is not limited to a predetermined number, but depends instead upon the scenario and tactics being practiced. Composite force exercises need the diverse targets and larger airspace associated with tactical ranges. Flight patterns and attack headings are more varied and are usually limited only by land and airspace boundaries, location of manned sites, terrain features and target characteristics. Simulated enemy threats may be arrayed to support general or specific scenarios, and aircrews have more latitude in response. Chapter 1 of Volume 2 discusses tactical range design and layout.

1.1.2.3. Nuclear ranges vary in design and location. Ranges designed for ordnance delivery simulating nuclear weapons are often collocated at conventional ranges and may be scored using the same equipment as conventional events. The Air Force constructs a specific target and locates it to allow an extended run-in. The prepared area around the target is larger for better visibility, and radar reflectors may be positioned at the target or elsewhere. The Air Force designs these ranges for the classic nuclear delivery requiring a long, stabilized run-in. Threat response and maneuvering share the conventional range limitations. Needless to say, crews use practice ordnance. Crews may also accomplish nuclear deliveries at tactical ranges on a variety of targets. Here, the Aircrew shares the training benefits of a tactical range; namely, flexibility in planning and tactics, maneuverability, and more challenging target identification. Some dedicated nuclear ranges, known as Electronic Scoring Sites (ESS), do not permit release of practice ordnance. Instead, other techniques involving telemetry and ground tracking provide scoring. Land and airspace requirements are significantly different for these ranges; Chapter 1 of Volume 2 covers these.

1.1.2.4. Side-Firing Ranges. These support aircraft mounted guns fired at or near right angles to the aircraft heading. The optimum range for side-firing aircraft is one with a large land area with many small roads and random tactical targets. Tactical ranges normally are sufficient as most side-firing aircraft provide their own scoring capability.

1.1.3. Air-to-Air Ranges. The Air Force may locate air-to-air weapons ranges over land or water. Aircrews use them when they need to employ air-to-air ordnance against airborne targets. This includes guns, missiles, rockets and other weapons. Air-to-air ranges require enough air and ground space to contain the employed ordnance within the range boundaries. Aircraft may tow targets, or the range may use unmanned drones. You can tailor training scenarios to meet most needs, provided that sufficient airspace and surface area is available. Surface facilities within the range area are not normally necessary; however, a significant investment in remote facilities will be necessary if the range

is instrumented. The air combat maneuvering instrumentation (ACMI) range is a specially instrumented air-to-air range providing unique capabilities to observe activities in real-time and record these activities for Aircrew feedback. Range Training Officers (RTO) monitor flight parameters, spatial relationship to other aircraft or targets and other mission information. The Air Force considers an ACMI range a class A range, since an RTO on the ground monitors operations and safety.

1.1.4. Range instrumentation. Range instrumentation and threat equipment should be standard features of a range's environment. Range instrumentation measures performance and provides feedback to the Aircrew and supervisor, while also enhancing range control and safety. Threat equipment simulates enemy air defenses (including surface-to-air missile systems, anti-aircraft artillery, and communications interference) and affords the capability to practice and evaluate Aircrew and aircraft countermeasures.

1.2. Range Classes. The Air Force formally classifies ranges as follows:

1.2.1. Class A. This range is manned, has a scoring capability from the ground, and has a Range Control Officer (RCO) on the ground who controls aircraft using the range.

1.2.2. Class B. This range is either manned or unmanned and has a scoring capability from the ground, but does not have a RCO on the ground controlling aircraft. The flight lead, forward air controller, or other person, as briefed will have RCO responsibilities.

1.2.3. Class C. This range is unmanned, with no scoring or aircraft control from the ground. The RCO function may be performed by the flight lead, forward air controller, or other person as briefed.

1.3. Assignment and Responsibility of Range Operating Agency.

1.3.1. Designating the Range Operating Agency. The MAJCOM having purview over the range may designate the range operating agency, or may delegate that authority to the numbered air force level. Normally, the wing identified as the primary user of the range will be selected. The ANGRC/DO will determine the operating agency for ANG ranges.

1.3.2. Operating Agency Responsibility. The operating agency is responsible for ensuring compliance with this instruction and other directives applicable to range programs. The operating agency must develop and publish all range operating procedures in a supplement to this instruction. This supplement must include a range description, diagrams, range scheduling procedures, operation, safety, authorized ordnance, authorized frequency clearances, chaff and flare, and laser procedures. In addition, the supplement must contain definitive guidance for coordinating and scheduling all range operations, including explosive ordnance disposal and fire fighting responsibilities. The operating agency must maintain a separate local document containing range maintenance procedures, opening and closing checklists, and schedules. The operating agency may delegate the daily scheduling, operation, maintenance and management to a subordinate unit.

1.3.2.1. Operations The operating agency is responsible for establishing range operating hours and scheduling use of the range during those hours. Normally, request use of the range advance to allow a weekly printed schedule. To provide maximum use of the range, the operating agency develops procedures to fill open range times on the printed schedule up to at least one hour prior to each range period. Do not abuse or construe these procedures as a method to circumvent normal scheduling procedures. You must maintain centralized scheduling and control to ensure optimum range use and safety. Units, other than those of the operating agency, using the range on a

recurring basis will develop a letter of agreement with the operating agency and conform to established range operating procedures. The operating agency for each range must develop and publish all range operating procedures in a supplement to this instruction.

1.3.2.2. Maintenance The operating agency must develop an annual range maintenance schedule that contains the annual, quarterly, monthly, and weekly maintenance schedules. Schedule government furnished equipment (GFE), such as vehicles, radios, scoring devices, etc., for inspections and routine preventive maintenance according to the applicable technical orders, regulations and instructions. Inspect and maintain buildings and other structures on the range the same as other real property on the base. Contractors must maintain contractor-provided equipment to a standard to fulfill contractual obligations. Schedule all routine and preventative maintenance so it is not entirely subordinate to operations.

1.3.2.3. Decontamination The operating agency is responsible for programming and scheduling all range decontamination. The published local comprehensive range plan must contain the decontamination schedule.

1.3.3. Support.

1.3.3.1. Supply. For GFE, obtain needed parts or replacements through normal supply procedures. The range operating agency should establish procedures with the parent supply organization to obtain materials for range operations, as well as salvage and disposal. When the distances between the parent base supply and the range is great, you may establish a separate supply section at the range to administer all supply activities.

1.3.3.2. Vehicles. The vehicles and heavy equipment necessary to operate and maintain a range will vary based upon type, number and class of ranges; terrain, vegetation, soil composition and climate; distance from parent base; and availability of commercial power. Tables of Allowance 126, 012 and 010 provide equipment authorizations for ranges. If you are using GFE, the parent base transportation officer is responsible for ensuring that range vehicles are properly maintained and are available to meet range requirements. The range operations officer will appoint a vehicle control officer or NCO to manage vehicle responsibilities according to AFI 24-301. The contractor is responsible for supply support and maintenance for contractor-provided vehicles. Vehicles and equipment may be obtained from the DRMO. Maintenance for these items may be provided by the contractor and parts obtained through supply.

1.3.3.3. Utilities. The operating agency is responsible for providing all utilities required in support of range operations. Commercially provided services should be used when available and expedient. A suitable secondary power source is required for Class A ranges regardless of the primary source of electricity. It must have sufficient capacity to power all towers, maintenance and administrative facilities, and electronic equipment; including targets with a power need such as infrared targets. Water may be provided by any means available, but must include provisions for replenishing fire fighting reserves.

1.3.4. Manning. The manning required to run the range will depend mainly upon distance from the parent base, size of the range, and type of equipment on the range.

1.3.4.1. Military. Besides the Range Operating Officer (ROO) and RCO, the range requires people to maintain and construct targets, man scoring towers, provide fire fighting support, maintain roads, etc. Depending upon distance from the parent base, there may have to be people stationed at the range to maintain and operate vehicles and heavy equipment. People will be required to

maintain radios and range scoring equipment. Additional personnel may be required to operate and maintain threat simulators. EOD personnel will periodically be required to supervise and perform decontamination operations.

1.3.4.2. Contract personnel may perform all range functions, including RCO, RTO and ROO.

1.3.5. Training.

1.3.5.1. Range Control Officer. The range operating agency will ensure that RCOs are fully trained before assuming RCO duties.

1.3.5.1.1. Academic Training. As a minimum, the RCO candidate will be trained in or demonstrate adequate knowledge of the following publications or subjects:

- AFI 13-212, Volumes 1, 2, and 3, Weapons Ranges, as supplemented.
- MCR 51-50, as supplemented.
- Intermediate command instructions and manuals applicable to range
- Operations.
- RCO authority and responsibilities.
- Aircraft ordnance delivery patterns day/night for all aircraft to be flown on the range.
- Required weather minimums for each event.
- Foul criteria.
- Communications procedures.
- Capabilities and limitations of range facilities.
- Hazards, pattern safety and overall range safety.
- Range record keeping.
- EOD briefing on the proper handling of training munitions.

1.3.5.1.2. On-range Training. A qualified RCO will supervise on-range RCO training. Operating agencies will develop a checklist to ensure complete and professional training. Emphasize the use of sound judgment and common sense while controlling both aircraft and personnel during range operations. The on-range training should include the following items as a minimum:

- Range hazards.
- Inspection of strafe impact areas.
- Fire fighting equipment and procedures.
- Crash/rescue procedures.
- Evacuation of injured personnel.
- Traffic conflict with other ranges in the area.
- Range pattern spacing.
- Minimum altitude measuring devices.
- Cease fire distance estimation for low angle strafe.
- Foul criteria and procedures.

- Bomb plotting and electronic strafe scoring equipment.
- Radio, other communications, and tape recorder operation.
- Lost communications procedures.
- Overall range safety.
- Night and tactical range operations (if applicable).

1.3.5.1.3. Certification and Currency. Each MAJCOM will establish its own evaluation, certification, and currency requirements and procedures. The Range ROO maintains records documenting training, certifications, evaluations, currency, and other pertinent data as long as RCO status is maintained.

1.3.5.1.3.1. Range O&M Personnel. Training should include local range operating procedures, maintenance requirements and safety. The operating agency should develop the training locally. The following subject areas should be developed for local conditions:

- Local range operating procedures.
- Maintenance procedures and issues.
- HM/HW and local environmental procedures.
- Poisonous or dangerous fauna and flora.
- Local weather hazards.
- Fire fighting support procedures.
- Aircraft crash procedures.
- Other emergency and contingency procedures.
- Basic first aid procedures.
- Explosive and other ordnance hazards (EOD briefing).
- Range access and security procedures.

1.4. Joint and Shared Use of Ranges.

1.4.1. Joint Use. Air Force policy encourages joint use to maximize use of ranges and associated airspace. Operating agencies will make excess range capacity available to other services or users. When the range is closed for operation, range lands should be available to compatible users for hunting, camping, etc. Live ordnance areas and other areas where hazardous activities occur must remain closed to public access. When not needed, range airspace should be released to the controlling agency for use by non-participating aircraft. Letters of agreement with the controlling agency must specify recall conditions to ensure that military mission requirements will be met.

1.4.2. Shared Use. Activities that can be permitted during range operations, such as grazing and crop cultivation, should be permitted provided human access is prohibited in the hazard area. These activities must not impair range operations in any way.

1.5. Use of Other Ranges:

1.5.1. Other Service Ranges. This instruction does not govern ranges operated by other services (Army, Navy, or Marine Corps). However, for Air Force use, all relevant weapon safety footprints must be contained within the range boundaries. It is the range user's responsibility to obtain charts,

range data, and flight information depicting the range boundaries and facilities to determine if the weapons safety footprints are contained within the range property. The range user must understand all risks associated with Air Force operations.

1.5.2. Test and Other Non-Training Ranges When test or other non-training ranges are used for training purposes, all personnel and operations must comply with this instruction.

1.5.3. Overseas Ranges Operated by a Host Nation. Overseas ranges operated by a host nation need not comply with this instruction.

1.5.4. Overseas Ranges Operated by the US Air Force. All overseas ranges operated by the US Air Force must comply with this instruction or host country guidance, whichever is deemed appropriate by the MAJCOM.

1.5.5. Strafe on Ranges Not Meeting Air Force Standards. Units desiring to strafe on ranges that do not comply with this regulation (paragraph **1.4.2.** and 1.4.3 above) must request a waiver or an exemption, as appropriate, according to paragraph **1.13.**. Since this is a safety issue, the request must contain a full description of the range conditions and/or intended strafe technique that will result in an acceptable risk.

1.6. Written Agreements for Ranges. If a range is used regularly for initial or continuation training, written agreements must exist between a using MAJCOM and the operating agency of ranges operated by another MAJCOM, service, or nation. Limited use during exercises, deployments, evaluations, or inspections does not require written agreements, but the using unit must possess current range directives. In all cases involving non-Air Force ranges, coordination of a draft agreement should include the Judge Advocate's office at the base level.

1.6.1. Written Agreements for Ranges. These agreements include the Memorandum of Understanding (MOU), Letter of Agreement (LOA), Host-Tenant Support Agreement (HTSA), and Interservice Support Agreement (ISA). Volume I of this instruction presents procedures for implementing these agreements. It is important to remember that their purpose is to describe a mutual agreement for the benefit of the signatories. Each signer must ensure that the needs of his organization are met without compromising the mission, and without placing his organization in an untenable position. One of the first things an action officer should do is enlist the support and guidance of the staff Judge Advocate General. He or she can save a lot of time and effort in drafting one of these documents. Another of the first things to be done is to develop the coordination requirements. All affected agencies should be involved. The prospective signatories may develop their own draft, which will help get their input in black and white. Plan on several exchanges of the document before everyone is satisfied. The ROO must be provided a copy of each agreement affecting range operations or maintenance. He should familiarize himself with them and keep them in a folder readily available to the RCO during range operation. If a conflict arises regarding one of these agreements the ROO or RCO should first see to safety and then notify the operating agency POC.

1.6.1.1. Memorandum of Understanding. A Memorandum of Understanding is required for Air Force units to use weapons ranges belonging to another nation. These may also fill the requirements of **1.7.3.**.

1.6.1.2. Letter of Agreement. Letters of agreement are commonly used to specify procedures at the local level, such as those between the operating agency and the controlling agency of local airspace.

1.6.1.3. Host-Tenant Support Agreement and Interservice Support Agreement. A Host-Tenant Support agreement or Interservice Support Agreement is required according AFI 25-201 for Air Force units using weapons ranges belonging to other services.

1.7. Land or Real Estate Ownership Policy: The decision to buy, lease or implement an easement is the responsibility of SAF. Air Force Real Estate Agency (AFREA) is the coordinating agency.

1.7.1. Fee Ownership. It is required by the Air Force to own all land within the hazard area. Most ANG ranges are operate on government property owned by another service or government agency. The hazard area typically extends beyond ANG controlled land but must be on government owned or controlled land. Also, every effort should be made to secure ownership of lands over which aircraft fly for each authorized event. If the land under the flight tracks is already federally owned, a written agreement between the Air Force and the appropriate agency may suffice, provided the long-term viability of the range can be assured.

1.7.1.1. All ranges manned by the ANG must have a federal interest established with a long term lease or permit.

1.7.2. Lease. A lease may, in some cases, be in the best interest of the Air Force to satisfy some land requirements outside the hazard area.

1.7.3. Restrictive Safety Easement. An easement is the least desirable approach to meeting land requirements outside the hazard area, due to the limited control over the land and resultant safety concerns.

1.8. Environmental Responsibilities. The operating agency is responsible for insuring that the range is included in environmental plans and programs, as specified in AFI 32-7061. The operating agency will also develop local compliance procedures and ensure that range personnel, including contractors are trained in those procedures. Range managers and supervisors will ensure that range personnel, operations, and maintenance activities remain in compliance with procedures.

1.9. Natural and Cultural Resources Responsibility. Large land or water areas comprise weapons ranges. They have many natural resources, and frequently contain historic or archaeological sites. The management and conservation of these valuable resources must be a matter of concern at all levels of command. As custodians of this public property, the Air Force has the responsibility to use and maintain it in the best manner consistent with the requirements of the military mission. Accordingly, the operating agency civil engineer will designate a point of contact for all conservation activities and assist in the management of the range's natural resources. For cultural resource matters, designate a Base Historic Preservation Officer. AFI 32-7065 contains specific responsibilities.

1.10. Comprehensive Range Planning. The range operating agency will develop a comprehensive range plan for each range as outlined in AFI 32-7062. The plan's purpose is to enhance the compatibility of land and airspace use, and provide guidance on near and long-term needs. The plan will address, as a minimum, landspace, airspace, range facilities, targets, instrumentation (including scoring devices), environmental items, local community and government use of adjacent land (regional development agreements), legal liability, rehabilitation or other actions that may have an impact on the range. For new ranges a plan will be developed not later than one year after the range becomes operational. Send plans to

the MAJCOM via intermediate commands for review and approval. Update plans as required, but at least every two years.

1.10.1. Planning.

1.10.1.1. Comprehensive Range Planning. A comprehensive range plan will be developed for each range according to AFI 13-212, Volume I, and AFI 32-7062. The purpose of the plan is to help identify problems and issues affecting the viability of the range, and to plan for enhancements in capability and assets. It will address land space, airspace, range facilities, targets, instrumentation (including scoring devices), environmental items, local community and government use of adjacent land (regional development agreements), legal liability, base facilities, range budget, and any proposed expansion, construction, rehabilitation, or other action that may have an impact on the range. For overseas ranges, MAJCOMs may alter the requirements of this plan as necessary to comply with host nation requirements. The following items will be addressed by the operating agency during the preparation of the range plan and the review process. A brief narrative will be prepared and included in the plan for only those items that are impacted. However, the plan will contain a statement that it has considered all items:

1.10.1.1.1. Range:

- Equipment.
- Targets.
- Structures.
- Land requirements (waivers and exemptions).
- Airspace Requirements.
- Maintenance and Decontamination.

1.10.1.1.2. Environmental:

- Fauna and Flora.
- Endangered Species.
- Emissions.
- Ambient Air Quality.
- Noise.
- Water Resources.
- Wetlands.
- Coastal Zones.
- Mineral Resources.
- Soil Conservation.
- Timber Resources.
- Grazing and Croplands.
- Hunting and Fishing.
- Outdoor Recreation.
- Hazardous Wastes.

- Historical Sites.
- Archaeological Sites.
- Range Land Use.
- Wilderness.
- Flood plains.

1.10.1.1.3. Community and Government:

- Off-Range Land Use.
- Regional Development.
- Zoning.
- Intergovernmental Agreements(s).
- Encroachment(s).

1.10.1.1.4. Legal:

- Liabilities.
- Environmental Laws.
- Ingrants and Outgrants.
- Other Agreements.

1.10.1.1.5. Base Facilities.

1.10.1.1.6. Range Budget:

- Past.
- Present.
- Future.

1.10.1.1.7. The goal of the range planning process is to identify, at the earliest possible time, any existing or potential conflicts and to propose alternative solutions and recommendations. The plan will be sent to the MAJCOM via intermediate commands for review and approval.

1.10.2. Environmental Plans and Programs. Environmental leadership has been established as a top priority within DoD. The Air Force is committed to achieving and maintaining environmental quality by building a program based upon the three pillars of planning, resource management, and compliance. Many of the activities associated with this commitment are regulated by myriad Federal, state, interstate and local laws that could subject the Air Force or its agents to civil and criminal liabilities or shut down some important aspect of the Air Force mission. Ranges may be impacted because of the hazardous materials used, hazardous waste generated and the large land mass that may be negatively affected by improper range operation and management.

1.10.2.1. Hazardous materials/hazardous waste (HM/HW) can be briefly defined as substances that are ignitable, corrosive, reactive, and/or toxic to living organisms. Examples of potential range HM/HW are explosives, paints and thinners, petroleum products, insecticides and herbicides. There are other materials that fall into these categories, so the ROO should request staff assistance from and maintain liaison with the base environmental shop. Although the operating agency is ultimately responsible for environmental compliance at the range, it is up to the ROO to

see that proper procedures are adhered to on a day-to-day basis. The base has many people involved in environmental issues and it is the base commander's responsibility to ensure that range personnel have access to these people, and are provided assistance to ensure compliance. Just a few of the personnel involved are the environmental protection committee, the base civil engineer, the bio-environmental engineer, environmental coordinator, staff judge advocate and the supply, transportation, safety, and public affairs officers. Training requirements for range personnel include briefings on what HM/HW is used and produced at the range, proper handling and storage, proper marking, and disposal procedures. Accumulation points (where HW may be stored for up to 90 days) must be established for used petroleum products generated as part of range operation and maintenance. Arrangements for periodic transportation to a permitted storage facility must be made. Accumulation sites for expended munitions must be located, and storage facilities for pesticides and herbicides built. Procedures must be established to handle and contain spillage of contaminates.

1.10.2.2. Environmental planning for ranges should be addressed in at least two major operating agency plans as well as several smaller plans. The Base Comprehensive Plan identifies the installation's goals and objectives, evaluates alternatives, selects the best, and develops an implementation schedule and a budget. Range operations, modifications and improvements should be an integral part of this plan. The Comprehensive Range Plan addresses many environmental issues for the range. The range should also be included in plans required by environmental regulations such as hazardous material management plan, hazardous waste management plan, spill prevention, control and counter-measures plan, and spill contingency plan. These plans collectively should cover most environmental issues that will arise at the range.

1.11. Classified Initiatives. Occasionally, there is a need to begin range planning for aircraft beddowns, new weapon systems, or other issues that are classified. MAJCOMs will establish a single point of contact to provide guidance to affected units for these activities, and will designate spokesperson(s) to respond to inquiries from external sources, such as the media or the public. Any proposed information release must be approved by the established point of contact and made available to all designated spokespersons in advance. The person established as the point of contact should seek assistance from the Public Affairs office as early as possible.

1.12. Reporting Requirements. Range resources are limited, costly and subject to competing requirements for their use. A reporting system of range use helps to maximize use of these resources. Each MAJCOM will develop and maintain a reporting system on range utilization, to include the major equipment items on the range. Major equipment items are defined as resources with a replacement value in excess of $500,000. Do not break out equipment items which are required as integral parts of a system to support a specific function. Report items supporting more than one system or which may be used independently. MAJCOMs will maintain a minimum range report data base of three years. AFI 13-212, Volume II, Weapons Range Management, contains expanded information on range reports and a sample format.

1.13. Exemptions and Waivers to AFI 13-212. Both exemptions and waivers permit exceptions to requirements set forth in AFI 13-212. The exceptions will be specifically defined, and are based on existing critical circumstances involving operations, maintenance and safety issues. Any change in critical circumstances is cause for review of the exemption or waiver. The operating agency is responsible for monitoring these circumstances and suspend activities permitted by the exemption or waiver when safety is in question. If safety is not the issue resulting from changed circumstances, operations and mainte-

nance activities may continue, pending review of the exemption or waiver, unless the operating agency judges them inappropriate. In either case, the operating agency must request an immediate review of the exemption or waiver through MAJCOM to HQ USAF/XOFC.

1.13.1. Exemptions. An exemption is a onetime (permanent) approval for non-compliance with a specific requirement of this regulation. Examples where exemptions would apply are for aircraft patterns to extend over non populated lands not owned or otherwise controlled by the Air Force, or for patterns to remain over public roads, railroads, power fines, pipelines and canal crossings. Exemptions will remain in effect for as long as the conditions remain unchanged.

1.13.1.1. Waivers. A waiver is temporary and is based on the fact that a plan exists to alleviate the condition. It has a definite expiration date of four years from date of approval or when the condition is alleviated, whichever occurs first. An exemption is normally more difficult to obtain, since it is Air Force policy to strive for compliance with regulations. Generally, it will be issued only when it is apparent that conditions can not be alleviated and the Air Force is willing to accept the risk involved.

1.13.1.1.1. Request for Exemption or Waiver. Request for exemption or waiver should contain, as a minimum, the following information:

- Range name and location.
- The operating agency and a point of contact.
- The requested exception to AFI 13-212. Reference the volume and paragraph.
- A thorough description of the conditions at issue. Include maps, charts, photos, drawings and other data to illustrate or define these conditions.
- A description of potential alternatives and their impact on training, operations, maintenance, cost and other factors deemed appropriate by the requesting agency.
- A description of actions and procedures proposed to mitigate any impact on safety or other issues of concern. Include maps, charts, graphics or other illustrations as appropriate.
- For waiver requests, include a copy or description of the plan to alleviate the condition, including project milestones, and any additional information bearing on the issue. Requests must be forwarded through channels to the MAJCOM range agency for review and coordination. MAJCOMs will forward requests to HQ USAF/XOFC for Air Staff coordination.

Chapter 2

ENSURING RANGE SAFETY

2.1. Range Safety. The operating agency assumes responsibility for establishing range safety procedures. Range operations must ensure optimum range use while maintaining the highest standards of safety.

2.1.1. Minimum Range Size.

2.1.1.1. Land. The minimum range size provides sufficient government owned or controlled land space to contain the hazard area. For air-to-air ranges, land space must be of sufficient size to ensure rockets, missiles, flares or projectiles stay within the range boundaries. In addition, there must be no permanent land use permitted by the Air Force (or other agency having jurisdiction over the land beneath the airspace) that would preclude live firing.

2.1.1.2. Airspace. Over all air-to-surface ranges, special use airspace (restricted area or warning area, depending on location) of sufficient size is required to:

- Extend laterally to accommodate all range surface area.
- Project vertically to encompass the required altitudes based upon types of weapons deliveries planned for that range. Adjacent published airspace in the form of Military Operating Areas (MOA) or Military Training Routes (MTR) will be required to contain off-range flight maneuvering if the following occur:

- Flight is within US domestic airspace.
- Aircraft speed exceeds 250 KIAS below 10,000 feet MSL (FAR 91.70).
- Such flight activity cannot be wholly contained within the range's restricted airspace.
- Air-to-air ranges must have sufficient airspace to ensure that all rockets, missiles, flares, or gun projectiles stay within the range airspace boundaries (restricted or warning area).

2.2. The Hazard Methodology. The Air Force comprehensive range planning process, as outlined in this instruction and AFI 32-7062, requires all ranges to address the issues involved in air-to-surface operations. One of the principle objectives of this program is to identify problem areas or potential conflicts between Air Force range operations and other land users. The Hazard Methodology is designed primarily to identify land use conflicts so they can be avoided and, to minimize hazards (see volume III).

2.3. Range Safety Supervision Responsibility. The operating or using agency will provide a qualified Range Control Officer (RCO) or Range Training Officer (RTO) who is responsible for overall range safety during aircraft operations at the range. Either may be military or civilian. (See Volume II, 5.3 and 5.5 for specific RCO/RTO responsibilities).

2.3.1. RCO Duties. On Class A ranges the RCO manages all range operations with regard to control of both aircraft and ground personnel and is responsible for air and ground safety. On Class B and C ranges, the flight lead, forward air controller (FAC) or other person, as briefed, assumes the responsibilities of the RCO. During air-to-air missions, the dart tow pilot or flight lead (as briefed) assumes the responsibilities of RCO. If the dart tow pilot is a civilian contract employee, the flight lead will assume RCO duties. The RCO must maintain continuous radio communication with all aircraft on the

range and will clear each aircraft before every hot or dry pass and each laser designation. The RCO *must* clear all ordnance deliveries before release.

2.3.2. RCO Qualifications and Documentation. Each MAJCOM will establish specific RCO qualifications and training requirements. Operating agencies will maintain record folders reflecting training, evaluations and certification of all RCOs. The RCO may be military or civilian but as a minimum RCOs must have prior experience in the following areas:

- Tactical air delivery of air-to-ground ordnance.
- Management, supervision, or control of operations on a conventional or tactical air-to-ground range.
- Manage, supervision, or control of military airfield operations.

2.3.3. RTO Duties. On ACMI ranges the RTO manages all range operations with regard to control of both aircraft and ground personnel and is responsible for air and ground safety. The RTO will monitor live missions as required, provide liaison with the airborne flight or mission commander and is responsible for overall range safety. The RTO is responsible for initiating Search and Rescue, when required.

2.3.4. RTO Qualifications and Documentation. Each MAJCOM will establish specific RTO qualifications and training requirements. Operating agencies will maintain record folders reflecting training, evaluations and certification of all RTOs. The RTO may be military or contractor furnished but as a minimum, RTOs must possess "rated expertise" (see A1.65).

2.4. Aircraft Accident Procedures. In the event of an aircraft crash on a Class A range during range operations, the RCO will initiate all necessary emergency actions. These include appropriate notifications, closing of the range and designating an airborne on scene commander. On Class B and C ranges, the RCO starts the emergency actions and, if feasible, acts as on scene commander.

2.5. Flight Safety. To maximize safety on and around ranges, the operating agency is responsible for pursuing an aggressive information program with the local aviation public. It will follow guidance published in AFPDs 13-1 and 13-2, include information on the hazardous operations associated with range activities and emphasize the danger to non-participating aircraft. The RCO and/or flight lead are responsible for enforcing safe operating procedures during range operations.

2.6. Use of Live Ordnance. The use of live ordnance is a necessary part of training. However, before a range is authorized for live ordnance use, the operating agency, with the approval and assistance of the MAJCOM, will assess the activities in accordance with the EIAP as directed in AFI 32-7061. Overseas activities will also be assessed in accordance with AFI 32-7061 or host nation criteria. Specific targets will be designated to preclude damage to range facilities and equipment. Neither the weapon safety footprint nor the aircraft flight track will overlay manned sites. The weapon fragmentation pattern radius is included in the weapon safety footprint parameters, but must be added along the aircraft flight track from point of arming. Manned sites and other facilities where the risk of damage is deemed unacceptable by the operating agency must not be within these areas. When weather and the local fire condition code (FCC) indicate increased risk of uncontrollable fire, use of live ordnance must be curtailed. The ROO will monitor the FCC and will suspend use of live ordnance when circumstances warrant.

2.7. Supersonic Flight in Range Airspace Supersonic flight over land is prohibited below 30,000 feet MSL (below 10,000 feet MSL overwater and less than 15 NM from land), except where specifically authorized. Refer to AFPDs 13-1 and 13-2 for farther guidance to obtain a supersonic waiver. Overseas locations will obtain host nation approval as necessary.

2.8. Flare and Chaff Use. Flares and chaff may be dropped only if specifically authorized for use on the range in question and ground impact will occur on government controlled land. This guidance assumes use of current inventory flares and chaff. Any cartridge having significantly different characteristics (such as pyrophoric flares or double squibbed chaff) will be ejected only on test ranges until its use is authorized by the MAJCOM. Use of flares will be suspended when warranted by fire condition code (FCC).

2.9. Emergency Jettison Areas. All ranges must have an area or areas designated for emergency jettison of ordnance, external fuel tanks, towed targets, etc. Supplements covering the operation of each range must specify the location of the jettison areas, types of ordnance that may be jettisoned and other procedures and restrictions. Jettison areas will be located such that maximum protection is provided to ground personnel in the event jettisoned ordnance detonates.

2.10. "Firepower" and Other Range Demonstrations. These events have the potential to enhance community relations and educate observers about Air Force capability. Staging one of these events presents additional concerns for safety, however, because many of the observers may be unfamiliar with or not understand the hazards associated with range operations. Each range operating agency must establish procedures to ensure positive control of all spectators. Observation points must be analyzed using the Hazard methodology to ensure that spectators are not within the hazard area during operations. The RCO or QAE will have control in those limited cases where DoD personnel or contractors need to be within the hazard area during operations to accomplish a specific task.

2.11. Ground and Explosive Safety.

2.11.1. Ground and Explosive Safety. The operating agency is responsible for setting up procedures for ground and explosive safety. In addition the operating agency must ensure the office of the District Engineer, US Army Corps of Engineers, publishes public notices relative to danger zones associated with ranges under the operating agencies control.

2.11.2. Hazard Notice. The operating agency must ensure that hazard notices are periodically brought to the attention of the local populace to inform them of hazards associated with trespassing on range property. These notices will include, but are not limited to, signs posting the area saying "Bomb Range" or "Gunnery Range," information given to the local news media, and informing local recreation clubs and associations of the hazards involved if their area of activity includes weapon range property.

2.11.3. First Aid and Evacuation. There must be provisions for first aid as well as expeditious pickup and evacuation of Aircrew members or range personnel injured during range operations.

2.11.4. Helicopter Landing Area. Each Class A, B, and C range will have a designated helicopter landing area. The landing area must have lighting provisions (temporary or permanent) if night operations justify need.

2.11.5. Fire Fighting Equipment. On Class A and staffed Class B ranges, appropriate fire fighting equipment and personnel must be available to deal with local fire hazards. This capability may be provided through Air Force, land owner, in-service civilian, or independent contractor assets, or through agreement with another government agency such as the Bureau of Land Management or US Forestry Service. Sufficient hand-operated fire fighting equipment must be assigned directly to the range for emergency use.

2.11.6. Emergency Procedures. Emergency procedures for each range must be published, reviewed yearly for currency and republished every five years at a minimum.

2.11.7. Parent Base Safety Office. In all matters of ground and explosive safety, the operating agency must maintain close liaison with the safety office of the parent base.

2.11.8. Safety Briefing Requirements. The ROO will provide and document initial and yearly ground and explosive safety briefings to personnel assigned to operate and maintain weapons ranges. Prior to non-EOD personnel being used to help clear ranges, they will receive appropriate briefings from EOD personnel. Visitors and personnel who infrequently visit the range must be escorted and kept under continuous surveillance by properly briefed and trained personnel.

2.11.9. Class A Range Communication Requirements. On Class A ranges, communications between flank towers and the control towers must be operational at all times and have a backup capability. In addition, all maintenance crews, EOD teams and visitor escorts must maintain two-way communications with the range control tower, range office or parent base while working on the range.

2.11.10. Hazard Condition Watch. The RCO and all range personnel must continually watch for hazardous conditions such as trespassers, fires, abnormal bird activity, etc.

2.11.11. Laser Operations. Laser operations present a different safety hazard from normal range operations. Safety requirements as outlined in Air Force Occupational Safety and Health (AFOSH) Standard 161-10 and AFI 13-212 must be strictly followed.

2.12. Manned Equipment. Manned equipment and facilities, such as range towers and simulated threat emitters, may be located within the hazard area during routine range operation provided training ordnance is used; however, the Hazard methodology must be applied to assess the risk for each proposed location. The operating agency must approve each location. The operating agency may delegate approval authority to the ROO for short notice, temporary locations known to be in a low risk area. These locations may be used for up to five range use days. After that, the operating agency must approve continued use of these locations. The ROO periodically reviews these locations as circumstances change. Aircraft will not directly overfly or point at manned sites. Aircraft with trainable guns, such as helicopters and AC-130, must not allow those guns to be pointed at any manned site during maneuvering.

2.13. Access to Hazard Areas. On ANG ranges where access to hazard areas is controlled by another agency, it is the responsibility of the range to inform that agency of the potential hazard.

2.13.1. Grazing Program. Grazing can be a complementary activity on Air Force weapon ranges and yields numerous benefits. Procedures for managing grazing programs are described in AFI 32-7004. The ROO and installation commander will determine suitability and availability of grazing lands as explained in AFI 32-7004 and the limitations outlined in AFI 13-212.

2.13.2. Other Commercial Activities. Ranges may also offer other commercial uses such as timber management and mineral exploration and extraction. These activities should be permitted if safe

operating procedures are established and adhered to, and such operations do not interfere with the range mission.

2.13.3. Recreation and Education Programs. Many ranges encompass large land or water areas and may contain significant natural resources, unspoiled wilderness areas, recreations areas, historical sites or archaeological sites. As custodians of this public property, the Air Force has the responsibility to use and maintain it in the best manner possible consistent with the military mission. AFI 32-7009 as well as AFI 13-212, provide additional information and specific responsibilities for proper management.

Chapter 3

FACILITIES AND EQUIPMENT

3.1. Range Towers. Range towers are grouped into two basic categories, control towers and flank towers. Both types should be of adequate height and construction to permit unobstructed observation of targets and aircraft patterns. Towers will have lightning protection installed.

3.1.1. Control Towers. The control tower is the center of control for most activity on ranges. Clearances and instructions to aircraft flying on the range and control of all ground personnel working on the range emanate from this point during operations.

3.1.2. **Flank Towers.** The flank towers associated with Class A or B ranges normally function as scoring towers only. They house scorers who have two-way primary and back up communications with other range towers.

3.2. Maintenance and Administration Areas. The requirement for and types of buildings required on each range varies depending upon the location of the range, class of range, proximity to the parent base and mission requirements. Regardless, each range should have facilities to maintain vehicles/heavy equipment indoors, with protection from the weather if maintenance is routinely performed on the range. Expensive range scoring equipment and computers should be housed and protected from environmental effects and damage. Fire trucks and water vehicles should be housed in a facility adequate to prevent them from freezing during periods of cold weather. Any buildings involved are classified as real property and, as such, upkeep and maintenance is the responsibility of the servicing civil engineering unit. Present ranges should be upgraded to these minimum standards, and new ranges should plan for and include these facilities in original start up cost figures.

3.3. Communication and Electronic Systems. The exact communication systems for each range may vary depending upon range class, location, operating condition, usage or other factors. However, three general types of communications systems are required for all ranges. First, point-to-point (ground) communications are required between the range (Class A or B) and the parent or using base and among the various agencies on the range. Second, ground-to-air communications are required on Class A ranges to control aircraft and on staffed Class B ranges. Although ultra high frequency (UHF) is the usual radio used, ranges that have regular users who use very high frequency (VHF), frequency modulation (FM), or amplitude modulation (AM) radios are authorized those types of radios. Class A ranges require a UHF back up capability while Class B ranges do not. Class C ranges require no radios. Third, point-to-point ground communications.

3.4. Utilities. Commercial power, whenever available and expedient should be used. If commercial power is not expedient, the base civil engineer will compute generator requirements for tower, range facilities and all electronic equipment including infrared targets. A suitable secondary power source to maintain tower operations is required and essential to safety.

3.5. Hazardous Material and Hazardous Waste Storage. Hazardous material purchase, use, storage, and disposal are governed by a multitude of Federal, DoD, USAF, state and local regulations and directives. Each base has a cognizant office to assure base compliance with these directives. The operating agency has responsibility for establishing local storage, handling and disposal procedures for hazardous

material. The cognizant office of the base having operational control of the range is responsible for helping establish range procedures to comply with these directives. The ROO is responsible for assuring compliance with written instructions on handling of hazardous material, and hazardous waste storage and disposition.

3.6. Tables of Allowance for Range Equipment. Tables of Allowance (TAs) 126, 010 and 012 will be used as the primary source of equipment authorization for ranges.

3.7. Security. Range security is the responsibility of the operating agency. Security requirements vary with each range and the specific requirements of each location. Normal physical safeguards must be established for scoring, communications, instrumentation, maintenance and classified equipment. Additionally, security for reasons of safety is required. The operating agency may delegate the authority for range security to other organizations or to civilian contract personnel.

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Attachment 1

GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS AND TERMS

References

AFPD 13-1, AFI 13-201 *Reducing Flight Disturbances* (formerly AFR 55-34)

AFPD 13-1, AFI 13-201 *Airspace Management* (formerly AFR 55-2)

AFPD 23-5, AFI 23-504 *Management of Recoverable and Unusable Liquids Petroleum Products*(formerly AFR 19-14)

AFPD 24-3, AFI 24-301 *Vehicle Operations, Acquisition, Management and Use of Motor Vehicles* (formerly AFM 77-310, Volume I)

AFPD 25-2, AFI 25-201 *Host-Tenant Support Responsibilities of USAF Organizations* (formerly AFR 27-4)

AFPD 32-30, AFI 32-3001 *Air Force Explosive Ordnance Disposal Program* (formerly AFR 136-10)

AFPD 32-70, AFI 32-7061 *Environmental Impact Analysis Process* (formerly AFR 19-2)

AFPD 32-70, *Planning in the Noise Environment* (formerly AFR 19-10)

AFPD 32-70, AFI 32-7006, #7060, #7063 *Interagency and Intergovernmental*

Coordination of Land, Facility and Environmental Plans, Programs and Projects (formerly AFR 19-9)

AFPD 32-70, AFI 32-7062 *Base Comprehensive Planning* (formerly AFR 86-4)

AFPD 32-70 *Conservation and Management of Natural Resources* (formerly AFR 126-1)

AFPD 32-70, AFI 32-7064 *Natural Resources - Land Management* (formerly AFR 126-2)

AFPD 32-70, AFI 32-7065 *Natural Resources - Historic Preservation* (formerly AFR 126-6)

AFPD 32-71, AFI 32-7103 *Hazardous Waste Management and Minimization* (formerly AFR 19-11)

AFPD 32-90, AFI 32-9001 *Acquisition of Real Property* (formerly AFR 87-1)

AFPD 32-90, AFI 32-9003 *Granting Temporary Use of Real Property* (formerly AFR 87-3)

AFPD 32-90, AFI 32-9004 *Disposal of Real Property* (formerly AFR 87-4)

AFPD 91-4, AFI 91-409 *Explosive Safety Standards* (formerly AFR 127-100)

AFPD 99-1, AFI 99-109 *Major Range and Test Facility Base* (formerly AFR 80-28)

AFOSH 161-10 *Health Hazard Control for Laser Radiation*

FAA Handbook 7400.2

FAA Handbook 7610.4

Abbreviations and Acronyms

ACC—Air Combat Command

ACMI—Air combat maneuvering instrumentation system

AFI—Air Force Instruction

AFM—Air Force Manual

AFMC—Air Force Materiel Command

AFOSH—Air Force Occupational Safety and Health

AFOTEC—Air Force Operational Test and Evaluation Center

AFPD—Air Force Policy Directive

AFSOC—Air Force Special Operations Command

AGL—Above ground level

AICUZ—Air Installation Compatible Use Zone

AM—Amplitude modulation

AMARC—Aerospace Maintenance and Regeneration Center

ANG—Air National Guard

ANGRC—Air National Guard Readiness Center

ATC—Air traffic control

BCE—Base civil engineer

CAF—Combat Air Forces

CE—Civil engineer

CEQ—Council on environmental quality

DoD—Department of Defense

DOPAA—Description of proposed actions and alternatives

DRMO—Defense Reutilization and Marketing Office

EA—Environmental assessment

ECM—Electronic countermeasures

EOD—Explosive ordnance disposal

EPC—Environmental protection committee

EPF—Environmental planning function

FAA—Federal Aviation Agency

FAC—Forward air controller

FAR—Federal Aviation Regulations

FM—Frequency modulation

IAW—In accordance with

KIAS—Knots indicated air speed

MSL—Mean sea level

NAF—Numbered Air Force

NEPA—National Environmental Policy Act

NCO—Non-commissioned officer

NM—Nautical mile

OT&E—Operational test and evaluation

PACAF—Pacific Air Forces

pdf—Probability distribution function

ROD—Record of decision

SAF—Secretary of the Air Force

SON—Statement of need

TA—Table of Allowance

UHF—Ultra high frequency

USAFE—United States Air Forces Europe

VHF—Very high frequency

Terms

ATPA-Allowable Target Placement Area—The area on a range within which targets may be placed. The targets may be periodically relocated within the ATPA to create desired training scenarios. Placement of targets within the ATPA should insure that the weapon safety footprints are contained within government owned or controlled land.

Certificate of Clearance—This is the official document certifying that the range land was carefully searched and cleared. It certifies that all dangerous and explosive materials reasonably possible to detect have been removed.

Controlled Firing Area—Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to non-participating aircraft and to ensure the safety of persons and property on the ground.

Controlling Agency—The air traffic control (ATC) facility responsible for providing air-to-air control services in and around designated airspace area. With respect to a restricted area, it is the facility that may authorize transit through or flight within the restricted area according to a joint-use agreement.

Conventional Range—A highly structured air-to-surface range designed and used mainly for qualification training.

Decontamination—The removal or disposal of unexploded ordnance, classified ordnance, inert ordnance residue, training projectile debris, and other debris from a range.

Descriptor—See Weapons Safety Footprint for descriptor definition.

Despecularization—The removal of any highly reflective material such as glass or polished metal from areas used as laser targets to prevent possible damaging reflections of the laser emissions.

FCC Fire Control Code—Although there is no national standardized fire code, local authorities should be consulted to develop local FCC regarding range operations. The U.S. Forestry Service is a good source for information.

Government Controlled—Control exercised by any agency of the federal government, not just the Air Force or DoD.

Hazard Area—The part of a range defined by a composite of all weapon safety footprints for all authorized weapon delivery events against targets located in the allowable target placement area.

Hazard Methodology—A step-by-step procedure for applying the weapon safety footprints to perform a quantitative risk assessment of aircraft ordnance deliveries.

Hazardous Activity—The release (pickle) of any type of ordnance in a Restricted Area.

Joint Use—With respect to ranges, it includes use by other MAJCOMs or services, provided operations are conducted in accordance with this instruction, as supplemented. With respect to range airspace, it means the use by civil or other military aviation when it is not required (activated) to contain the activities for which the airspace was designed.

MAJCOM-Major Command—A major subdivision of the Air Force that is assigned a major part of the Air Force mission. Major commands report directly to Headquarters United States Air Force (HQ USAF). The ANGRC/DO serves as the MAJCOM for Air National Guard Ranges.

MOA-Military Operations Area—Special use airspace allocated to the military to separate/segregate certain military activities from Instrument Flight Rules (IFR) traffic and to identify for Visual Flight Rules (VFR) traffic where these activities are conducted.

MTR-Military Training Route—A route used by the Department of Defense (DoD) for the purpose of conducting low altitude navigation and tactical training in both instrument and visual weather conditions below an altitude of 10,000 feet mean sea level (MSL) at airspeeds in excess of 250 knots indicated airspeed (KIAS).

Multiple Use—With respect to range lands, it includes certain compatible activities that may be permitted when the range is closed for operations.

Operating Agency—The agency designated to operate and maintain the range. The operating agency may delegate the daily scheduling, management, and maintenance of the range to any appropriate subordinate unit.

Prohibited Area—A specified area over the land of a state, or territorial waters adjacent thereto, within which the flight of aircraft is prohibited.

Range-ANG—For ANG ranges, the term range will pertain all buildings and property that is established by the lease license, permit or other written agreement for either exclusive or joint use of the ANG for the purpose of weapons delivery.

Range Classifications:

- **Class A.** This range is manned, has a scoring capability from the ground, and has a Range Control Officer (RCO) on the ground who controls aircraft using the range. An ACMI range is also considered a class A range.

- **Class B.** This range is either manned or unmanned and has a scoring capability from the ground, but does not have a RCO on the ground at the range controlling aircraft. The RCO function may be performed by the flight lead, forward air controller or other person, as briefed.
- **Class C.** This range is unmanned, with no scoring or aircraft control from the ground. The RCO function may be performed by the flight lead, forward air controller or other person, as briefed.

Range Control Officer (RCO)—The person responsible for range operations and safety during range operation. The RCO clears all ordnance deliveries before release.

Range Decontamination Report—A narrative statement about the decontamination of a range and serves as a factual record of the decontamination. Also known as Report of Clearance, it is not a Certificate of Clearance and will not be used as such.

Range Operations Officer (ROO)—The individual responsible for all range maintenance and day-to-day operating activities. He is the interface with operations personnel and other base agencies. For matters of safety, the ROO will be subordinate to the RCO during aircraft operations on the range. The ROO will be qualified as a RCO. For ANG ranges, as assigned by Range CC/OIC.

Range Training Officer (RTO)—The person responsible for ACMI/ACTS range operations and safety during range operations. The RTO will establish communications with aircraft entering the range.

Rated Expertise—Rated officer/warrant officer who has graduated from a DoD flight training school (Pilot, Navigator, Naval Flight Officer or Aerial Observer).

Restricted Area:

- An area (land, sea or air) in which there are special restrictive measures employed to prevent or minimize interference between friendly forces or an area under military jurisdiction in which special security measures are employed to prevent unauthorized entry.
- Airspace within which the flight of aircraft, while not wholly prohibited, is subject to restriction. IFR or VFR operations in the area may be authorized by the controlling air traffic control facility when it is not activated by the using agency. Where joint use is authorized, the name of the ATC controlling facility is shown.
- An area that must contain all "Hazardous Activity" as defined by branch of service for specific type of aircraft using the range.

Restrictive Safety Easement—An agreement whereby the Air Force purchases the right to place restrictions on types and/or times of the land owners' use.

Scheduling Agency—The agency, organization or military activity responsible for scheduling all activities in designated land and airspace areas.

Shared Use—When participating (as defined by the using agency) and non-participating (civil or military) users share designated land and/or airspace areas on a noninterference basis.

Special Use Airspace—Airspace of defined dimensions wherein activities must be confined because of their nature, and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Types of special use airspace:

- Alert Area.
- Controlled Firing Area.
- Military Operations Area.

- Prohibited Area.
- Restricted Area.
- Warning Area.

Tactical Range—An air-to-surface range with an array of realistic targets and simulated enemy air defenses. Designed for experienced crews to improve skill, proficiency and tactics.

Training Ordnance:

- *Boosted Munitions (forward firing)* Munitions such as the AGM-65 Maverick missile and the 2.75 folding fin rocket having propellant that drive them.
- *Full-Scale Inert* Training bombs that are concrete-filled and are the full size and weight of the actual bomb. These bombs contain no explosives, pyrotechnics, or chemical agents.
- *Practice Bombs* Practice bombs may be full scale or miniature. Currently, practice bombs contain a small explosive charge or pyrotechnic that marks the point of impact with a small cloud of smoke or flash. For example, BDU-33 practice bombs contain a MK 4 spotting charge, and MK 82 practice bombs may contain 6.25 pounds of composition C-4 high explosive. British 1,000-pound class practice bombs may contain 50 pounds of TORPEX. These bombs normally use a fuze to initiate the high explosive fillers.
- *Training Projectile (TP) Ammunition* Ball projectile gun ammunition that has no explosive in the projectile.

Warning Area:

- A specified area above, below, or within which there may be potential danger.
- Airspace of defined dimensions over international waters that contain activity which may be hazardous to non-participating aircraft.
- An area that must contain all "Hazardous Activity" as defined by branch of service for specific type of aircraft using the range.

Weapon Safety Footprint—A closed contour that defines the land area required to contain 99.99 percent, at a 95 percent confidence level of all initial impacts and ricochets resulting from the release of a specified weapon type during air-to-surface weapon delivery events.

Using Agency—Any agency authorized to use range land and airspace by the scheduling agency.